

What is claimed is:

1. In a communications system comprising a plurality of cells, each cell
5 having a base station and a plurality of mobile stations, a method of scheduling
packet transmission comprising:
 - a) determining a nominal power level for all base stations in the system;
 - b) determining an average effective data rate for all mobile stations in the
system;
 - 10 c) using the transmit power level and average effective data rate to
determine a tentative transmission schedule for each of the plurality of mobile
stations in the system; and
 - d) modifying the tentative transmission schedule using current radio
15 conditions in a particular cell to determine an actual transmission schedule for
each mobile station in the particular cell.

2. The method of claim 1 wherein step a) comprises the steps of initializing the transmit power level to a predetermine value and using the predetermined value to determine the nominal power level for all base stations in the system.

5 3. The method of claim 2 wherein step b) comprises the steps of:

- i) approximating a signal to interference plus noise ratio (SINR) for each of the plurality of mobile stations in the system;
- ii) using the SINR to determine a modulation and coding scheme and/or spreading factor and effective data rate for each of the plurality of mobile stations in the system; and
- 10 iii) using the effective data rate to determine the average effective data rate for all mobile stations in the system.

15 4. The method of claim 3 wherein the step of approximating the SINR comprises using the nominal power level, current gain, current interference channel gain and receiver noise power plus unaccounted interference terms.

20 5. The method of claim 4 wherein the current gain, current interference channel gain and receiver noise power plus unaccounted interference terms are obtained by polling transceivers at each of the plurality of mobile stations and the base station for a measurement report.

25 6. The method of claim 3 wherein the step of approximating the SINR comprises obtaining the SINR from a measurement report.

7. The method of claim 3 wherein step ii) comprises using a plot of signal to interference plus noise ratio vs. FER to determine the modulation and coding scheme.

30 8. The method of claim 7 further comprising using a plot of signal to interference plus noise ratio vs. effective data rate and the modulation and coding scheme to determine the effective data rate for each mobile station in the system.

9. The method of claim 3 wherein step iii) further comprises using the average effective data rate to determine a planned fraction of frames to be used each of the plurality of mobile stations in the system.

10. The method of claim 1 wherein step c) comprises the steps of updating the nominal power level and determining whether convergence has been achieved; wherein if convergence has not been achieved, repeating steps b) – d).

11. The method of claim 10 wherein if convergence has been achieved, using values determined in steps a) – d) to determine a tentative transmission schedule for each of the plurality of mobile stations in the system.

12. The method of claim 1 wherein step d) comprises:

- i) determining an actual power value for each of the plurality of mobile stations in the cell; and
- ii) determining an actual effective data rate for each of the plurality of mobile stations in the cell;
- iii) determining a current credit value for each of the plurality of mobile stations in the cell;
- iv) determining which mobile station of the plurality of mobile stations has a lowest amount of normalized bytes to transmit; and
- v) scheduling the mobile station with the lowest amount of normalized bytes for transmission.

13. The method of claim 12 wherein step i) comprises using the nominal power level and current values of gain and interference terms in a power control algorithm to determine the actual power value.

14. The method of claim 12 wherein step ii) comprises using the nominal power level and current values of gain and interference terms in a data rate/link adaptation algorithm to determine the actual effective data rate.

15. The method of claim 12 wherein step iii) comprises using the actual effective data rate, the average effective data rate and a quality of service of each mobile station of the plurality of mobile stations in the cell to compute the current credit value of each of the plurality of mobile stations.

16. The method of claim 12 further comprising the step of updating the amount of normalized bytes for each mobile station in the cell.

17. The method of claim 1 wherein step d) comprises:

i) determining an actual power value for each of the plurality of mobile stations in the cell;

ii) determining an actual effective data rate for each of the plurality of mobile stations in the cell;

iii) updating the average effective data rate for each mobile station of the plurality of mobile stations in the cell;

iv) determining a current credit value for each of the plurality of mobile stations in the cell;

v) determining which mobile station of the plurality of mobile stations has a lowest amount of normalized bytes to transmit; and

vi) scheduling the mobile station with the lowest amount of normalized bytes for transmission.

18. The method of claim 17 wherein step i) comprises using the nominal power level and current values of gain and interference terms in a power control algorithm to determine the actual power value.

19. The method of claim 17 wherein step ii) comprises using the nominal power level and current values of gain and interference terms in a data rate/link adaptation algorithm to determine the actual effective data rate.

20. The method of claim 17 wherein step iv) comprises using the actual effective data rate, the average effective data rate and a quality of service of

each mobile station of the plurality of mobile stations in the cell to compute the current credit value of each of the plurality of mobile stations.